

OPENING COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39 E) ON THE SMART INVERTER WORKING GROUP PHASE 2 DRAFT RECOMMENDATIONS

I. Introduction

In compliance with the instructions provided by the California Public Utilities Commission (CPUC) Energy Division¹, Pacific Gas and Electric Company (PG&E) provides these opening comments on the *Recommendations for Utility Communications with Distributed Energy Resources (DER) Systems with Smart Inverters, Smart Inverter Working Group Phase 2 Recommendations Draft Version 2*² (Draft Report). The Draft Report continues to be a work in progress with many issues continuing to be discussed by the various stakeholders in the CPUC and California Energy Commission (CEC) sponsored Smart Inverter Working Group (SIWG). The October 27, 2014 CPUC workshop provided an additional opportunity for interested parties to ask questions, provide comments and debate various aspects of smart inverter communication related issues. PG&E looks forward to continuing to work closely with the other stakeholders in the SIWG as this report becomes further improved and refined. PG&E offers a number of comments on various portions of the reports, organized by section, below.

II. Report Review

A. General Comments

As a preliminary matter, the introduction to the report should make it clear that the term “DER Systems” or “DER” is shorthand for “distributed energy resources systems with smart inverters” and that the recommendations of the SIWG will be focused on the requirements for the *inverter* serving the generating facility or distributed energy resource. Another important general comment is that testing and certification needs to be incorporated into the Phase 2 plans

¹ The Agenda for the October 27, 2014 Smart Inverter workshop served on the service list for R.11-09-011 included the due dates for these comments. Jamie Ormond, Energy Division staff, also relayed the instructions for these comments and the due dates during the workshop and in a subsequent notice to the service list on November 6, 2014.

² Comments were requested on Draft Version 2 – updated October 22, 2014.

prior to any elements becoming mandatory under Rule 21. This is important because while the SIWG is investigating a broad range of use cases, both technology and possible applications are expected to change. In addition many of the functions and schemes under consideration will require testing prior to implementation. For these reasons, PG&E recommends that options remain open at this point.

B. Comments on Draft Report Sections

1. Section 1. Introduction

No comment at this time since no text is provided.

2. Section 2. Scope of SIWG Phase 2 Recommendations

PG&E recommends that the Level 3 layer shown in the chart on page 1 be deleted since it is inconsistent with the other levels, which have distinct entities associated with each level.

3. Section 3. SIWG PHASE 2 Recommendations for Communication Aspects to be Covered in Rule 21

a. Overall

PG&E recommends that IEC 61850 be specified as the data model, while the choice of specific device communication protocols should be left open at this point. Smart Energy Profile (SEP) 2.0 is one alternative for device level communication, however, it will take a modification to the SEP 2.0 standard to implement the use cases specified in the Draft Report. The risk is that modifying an industry standard like this could take a long time, and the standard might become obsolete or be replaced by an alternative. For instance, it could turn out that SEP 2.0, or IEC 61850 using Manufacturing Message Specification (MMS), or Web Services, or a standard like the new Thread network is a better choice. For this reason, PG&E recommends that the Draft Report be modified to reflect that defining this level of communication protocol is premature.

b. SIWG PHASE 2 Example: SEP 2 used as “Transmittal Protocol” between Utilities and other Entities

There are three different use cases identified in this diagram on page 4:

1. Utility to DER Management System (Commercial / Industrial)
2. Utility to DER Aggregator (Could be Small or Large implementation)

3. Utility to Individual DER system (Residence)

The communication protocol will most likely be different for each of these use cases. Connectivity options will vary between a commercial implementation and an individual residence. Therefore, we should not specify one network or communication protocol option for all of these use cases. The type of implementation will dictate the appropriate communication configuration.

The non-functional requirements regarding response time and latency will vary also. Therefore, we should specify the data model, IEC 61850, but not the device protocol (e.g., SEP 2, BACnet, ModBus, GOOSE).

c. SIWG PHASE 2 How to Resolve Protocol Issues?

PG&E recommends that the SIWG explore several options and does not believe resolving the issue with one protocol is the right focus for this group. We recommend that the California utilities work together to conduct work sessions with Smart Inverters and utility systems in order to find the most ideal and practical solutions. The utilities have very similar requirements, so this may be an easier path to identifying potential options.

d. SIWG PHASE 2 Gateway Configurations

PG&E recommends that the “FDEMS (Residential, Commercial, Power Plan)” box, and the “Facility DER Energy Management System (FDEMS)” box that currently say:

“SEP2 – Comm Stack”, “HTTP – Comm Stack,” and “ModBus Comm Stack”

Be modified to instead say:

“Comm Stack.”

This change is needed so we remain flexible enough in our implementation to account for product variance and future technology innovation.

4. Section 4. Smart Inverter Use Cases

PG&E recommends specific revisions to two of the use cases listed in the Draft Report.

a. DER Response to Emergencies

- Second and third bullets: Recommend removal of anti-islanding verbiage. The intent is not to modify the anti-islanding performance. The curves should not affect anti-islanding performance. The modified bullets will read that “Utility updates the voltage ride-through curves” and “Utility updates the frequency ride-through curves.”
- Fourth and fifth bullets: Replace microgrid with DER. For this use case, microgrid is the same as DER from the utility perspective.
- Sixth bullet: Delete bullet. Ancillary service is a marketing function and not a utility function.

b. Scheduling DER Output, Modes, and/or Functions

- First bullet: Remove ancillary services bid into market verbiage.

5. Section 5. Utility Data Monitoring and Control Requirements

a. Section 5.1 Data for Direct Interactions

PG&E believes that the dataset shown is adequate for now. However, this is an evolving area. As more experience is gained over time and additional use cases are identified, more data may be required.

b. Section 5.2 Additional Information for Interactions with Aggregators

Modify the text in this section to provide: “Aggregators may be required and the utilities will work with Aggregators to identify the most useful architecture/format to communicate with the DER systems.” This change is needed because it is premature to go into this level of detail.

c. Section 5.3 Utility Performance Requirements for Interacting with Different Types of DER Systems

This appears to repeat the data in Section 5.2. Recommend deletion.

6. Cyber Security and Privacy Requirements

The infrastructure for distributed generation management will include utility systems,

networks, communication protocols and smart inverter devices. We will need to address security from a system perspective. We should address security for this solution in the same way that we have addressed security for the SmartMeter solution, Home Area Network Devices, Line Sensors and other devices on our network. The system as a whole must be evaluated for risk. As part of the process potential network vulnerabilities, data sensitivity and security level, as well as communication protocols and vulnerability at the device level, will all need to be addressed.

PG&E appreciates the opportunity to provide these comments on the Draft Report.